

THE RELATIONSHIP OF EARLY INITIATION OF BREASTFEEDING (IMD) TO THE INCIDENCE OF HYPOTHERMIA IN NEWBORNS

Reni Komariyah¹, Juni Sofiana², Siti Mutoharoh³, Adinda Putri Sari Dewi⁴
^{1,2,3,4} University of Muhammadiyah Gombong

* corresponding author : reniyah39@gmail.com

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ABSTRACT

Background: The *World Health Organization* (WHO) has recommended care to maintain heat in newborn care such as keeping the baby warm, maintaining the baby's environment, but hypothermia continues to be a common *neonatal* condition, which is unknown, undocumented and poorly treated. Actionsthat play a very important role in reducing the incidence of hypothermia are by doing Early Breastfeeding Initiation (IMD) or (*early initiation*).
Objective: To determine the relationship between Early Breastfeeding Initiation (IMD) to the incidence of hypothermy in neonates at Palang Biru Gombong Hospital.

Method: This study used quantitative research with an *observational analytic* design . The sample size in this study was 43 respondents using *purposive sampling* techniques. In analyzing the data bivariately, data testing was carried out using the *Chi-square Test* with a significant level of 95%,

Result: Chi-Square Test results obtained a *p-value* of $0.001 < 0.05$ so that it can be concluded that H_0 is rejected and H_a is accepted which means there is a relationship between Early Breastfeeding Initiation (IMD) to the incidence of hypothermy in neonates at Palang Biru Gombong Hospital.

Conclusion: Early Breastfeeding Initiation (IMD) is related to the incidence of hypothermy in neonates at Palang Biru Gombong Hospital

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1. Introduction

Maternal and Child Health is a top priority in Indonesia's health development. Assessment of health status and efforts of maternal and child health performance is carried out to determine the health welfare of Indonesia. The success of maternal and child health efforts can be seen from the indicators of Maternal Mortality Rate (MMR) and Infant Mortality Rate (AKB). RDA is the number of infant deaths before the first 28 days of life per 1000 live births [1].

Data shown by the World Health Organization (WHO) in 2020 stated that in 2020 the number of RDAs in the world was 34 per 1,000 live births, IUDs in developing countries 37 per 1,000 live births and IUDs in developed countries 5 per 1,000 live births. RDA in East Asia 11 per 1,000 live births, South Asia 43 per 1,000 live births, Southeast Asia 24 per 1,000 live births and West Asia 21 per 1,000 live births [2].

According to Indonesian Demographic and Health Survey (IDHS) data, the Infant Mortality Rate (AKB) in Indonesia in 2019 was 4,221 cases (Ministry of Health, 2019). The number of infant mortality cases in Central Java Province based on data from the Central Java Health Office (2020) was 421 cases in 2019. This number has decreased significantly compared to the number of maternal death cases in 2018 which reached 475 cases. Based on data from the Kebumen District Health Office, the infant mortality rate in 2020 was 15 cases from 19,548 live births [3].

The causes of death in newborns in 2020 according to the Ministry of Health of the Republic of Indonesia are hypothermy 29%, asphyxia 27%, tetanus neonatorum 10%, feeding problems 10%,

jaundice neonatorum 6%, infection 5%, congenital abnormalities 1%. A high prevalence of hypothermia has been widely reported even from tropical countries. The World Health Organization (WHO) has recommended care to maintain heat in newborn care such as keeping the baby warm, maintaining the baby's environment, but hypothermia continues to be a common neonatal condition, which is unknown, undocumented and poorly treated.

Factors causing hypothermia are newborns have a wider body surface than adults and lose heat faster. At birth, babies are not yet able to regulate their body temperature and need external settings to keep them warm. The baby's body temperature is a measure of the need for a warm bed until his body temperature stabilizes. Heat loss is caused by ambient temperatures that require the baby to adjust. In the first 30 minutes, the baby's body temperature will drop by about 3-4°C. In a room with a temperature of 20-25°C, the baby's skin temperature drops by about 0.3°C per minute.

The low temperature of the baby causes metabolic and physiological processes to slow down. The breathing rate and heart rate slow down greatly, the blood pressure is low and consciousness disappears. If this situation continues and does not get treatment, it can cause death in newborns. In addition, hypothermic babies can experience cold stress due to increased oxygen consumption, lactic acid production, decreased blood clotting ability and hypoglycemia.

Prevention that can be done for hypothermic cases is to keep the baby warm, ensure the environment around the baby, and skin-to-skin contact (Rahmawati, 2015). Actions that play a very important role in reducing the incidence of hypothermia are by doing Early Breastfeeding Initiation (IMD) or (early initiation). Early Breastfeeding Initiation (IMD) is the process of a baby breastfeeding immediately after being born with its own mother's milk within the first hour of birth [5]. Early Breastfeeding Initiation Technique is by bending the newborn to the mother's chest without a cloth base then the baby will move his body to find the mother's nipple by itself (without assistance) after that the baby will be able to breastfeed for the first time in the first 1 hour of life [4].

Early Breastfeeding Initiation (IMD) has become one of the government's programs in reducing AKB related to the 2015 MDGs achievement target regulated in Government Regulation No. 33 of 2012. In Indonesia, the early breastfeeding initiation process increased to 34.5 percent (2019) from 29.3 percent (2018). The most breastfeeding process occurs at 1-6 hours after birth (35.2%) and less than 1 hour (early initiation of breastfeeding) by 34.5%. While the lowest process of starting breastfeeding occurs at 7-23 hours after birth, which is 3.7%.

Research [6] in Ghana states that IMD can save 22% of babies who die before one month of age, IMD is referred to as a life-saving measure. IMD is the key to successful breastfeeding. The mother's skin serves as a thermoregulator for the baby, the mother's chest skin temperature will adjust to the baby's body temperature, if the baby is cold automatically the mother's skin rises two degrees to warm the baby so as to reduce the risk of hypothermia, if the baby's temperature increases, the mother's skin temperature automatically drops one degree to stabilize the baby's temperature [7].

According to the results of Ernawaty's research in 2019, it shows that the body temperature of newborns after the implementation of IMD is in a stable state because mothers and babies seem calmer and happier. The mother's body skin is able to control the warmth of her chest according to the baby's needs, this will make the baby will be at optimal body temperature so that the baby feels more calm and comfortable, not only to provide benefits to prevent hypothermy, the emotional state of mother and baby in other words the bond of affection (bonding) between mother and baby is well established, This will have a great impact on the development of the baby, because the bond of affection has been well established.

Research [8] also proves that Early Breastfeeding Initiation (IMD) affects changes in newborn body temperature. As long as the baby crawls to find the breast, starting breastfeeding as soon as possible to warm the baby completely. Because the body temperature of mothers who give birth is hotter than mothers who do not give birth, if the baby is placed on the mother's chest it can warm the baby and prevent the baby from experiencing a decrease in body temperature.

Palang Biru Gombong Hospital is one of the hospitals located in Gombong District, Kebumen Regency. The results of a preliminary study conducted by researchers obtained data on the number of newborns at Palang Biru Gombong Hospital in the January to April 2022 period of 159 babies. The incidence of hypothermy in newborns at Palang Biru Hospital for the period January to April 2022 is 48 babies. The cause is due to the cold temperature around the baby's environment, the delay in drying the baby's body after giving birth From the background description above, researchers are interested in carrying out research on the Relationship of Early Breastfeeding Initiation (IMD) to the Incidence of Hypothermia in Newborns at Palang Biru Hospital Gombong.

2. Materials and Method

This study used quantitative research with an observational analytical design. The sample size in this study was 43 respondents using purposive sampling techniques. In analyzing data bivariately, data testing was carried out using the Chi-square Test with a significant level of 95%

3. Results and Discussion

3.1. Results

1. Characteristics of respondents

Characteristic	Frequency (n)	Percentage (%)
Gender		
Man	14	32.6
Woman	29	67.4
BB Born		
< 2500 grams	0	0
2500- 4000 grams	40	93.1
>4000 grams	3	6.9
PB Born		
≤50 cm	24	55.8
>50 cm	19	44.2
Gestation		
Aterm	37	86.0
Preterm	3	7.0
Postterm	3	7.0
Total	43	100.0

Source : Primary Data, 2022

The frequency distribution of neonatal characteristics in table 3 states that most of them are female by 67.4%, neonatal birth weight is mostly 2500-4000 grams which is 93.1%, and 55.8% of neonates have a body length of ≤50 cm. The characteristics of neonates based on gestation stated that 86% were *term births*.

2. Early breastfeeding initiation at Palang Biru Gombong Hospital.

The following is a table of frequency distribution of early breastfeeding initiation at Palang Biru Gombong Hospital

IMD Process	Frequency	Percentage
IMD Success	24	55.8
IMD Unsuccessful	19	44.2
Total	43	100.0

Source : Primary Data

The table above states that most IMD processes are successful (55.8%).

3. Body temperature in neonates at Palang Biru Gombong Hospital

The following is a table of the frequency distribution of body temperature in neonates at Palang Biru Gombong Hospital

Body Temperature	Frequency	Percentage
No hypothermy	33	76.7
Hypothermia	10	23.3
Total	43	100.0

Source : Primary Data

Body temperature in neonates in the table above states that most are in the non-hypothermic category which is as much as 76.7%.

4. The relationship of early breastfeeding initiation (IMD) to the incidence of hypothermy in neonates at Palang Biru Gombong Hospital

The results of the *Chi-Square* Test on the relationship of Early Breastfeeding Initiation (IMD) to the incidence of hypothermia in neonates at Palang Biru Gombong Hospital can be seen in the table below:

Status IMD	Neonatal Temperature						<i>p-value</i>
	Usual		Hypothermia		Total		
	f	%	f	%	f	%	
Succeed	23	95.8	1	4.2	24	100	0.001
It didn't work	10	52.6	9	47.4	19	100	

The table above explains that most respondents who successfully performed IMD had a normal body temperature of 95.8% and neonates who did not succeed in IMD of 47.4% experienced hypothermy. The results of the *Chi-Square* Test obtained a *p-value* of $0.001 < 0.05$ so that it can be concluded that H_0 is rejected and H_a is accepted which means that there is a relationship between Early Breastfeeding Initiation (IMD) to the incidence of hypothermy in neonates at Palang Biru Gombong Hospital

3.2. Discussion

1. Early breastfeeding initiation at Palang Biru Gombong Hospital.

The results stated that most of the IMD processes were successful (55.8%). This is because both mothers and health workers provide opportunities and education related to the importance of the IMD process. Newborns can experience heat loss four times greater than adults, resulting in a decrease in body temperature. In the first 30 minutes the baby can experience a temperature drop of 3-4°C. In a room with a temperature of 20-25°C the baby's skin temperature drops by about 0.3°C per minute. The baby's imperfect ability to produce heat makes the baby very susceptible to hypothermy. The low temperature of the baby causes metabolic and physiological processes to slow down. The breathing rate and heart rate slow down greatly, the blood pressure is low and consciousness disappears. If this situation continues and does not get treatment, it can cause death in newborns [9]. Skin contact in this IMD process, through sensory stimuli such as touch, warmth, and smell, can be a powerful vagal stimulation. This stimulation has one effect, namely the release of the maternal hormone oxytocin [3]. The nipple suction stimulus also causes signals that are transmitted through sensory nerves to oxytocin neurons present in the paraventricular and supraoptic nucleus in the hypothalamus which causes the release of oxytocin by the posterior pituitary gland [5]. Oxytocin can cause an increase in temperature in the mother's breast, so it can also warm the baby.

According to research [5] there is an increase in breast temperature in childbirth mothers who have skin contact with the baby for 30-120 minutes, which is 0.60°C. The mother's maternal temperature is related to the temperature of the baby's axillary and feet [2]. This makes the newborn's temperature stable. Newborns who get skin contact with the mother early have an average temperature rise of 0.7°C [2]. In this study, the temperature of newborns after early initiation of breastfeeding had an average of 37.25°C. This is in line with Chiu's research in 2005. During mother-infant skin contact, most babies will reach and maintain a temperature between 36.5 – 37.6°C, which is the thermoneutral range. This happens because the mother has the ability to regulate the baby's temperature during skin contact of mother and baby.

2. Body temperature in neonates at Palang Biru Gombong Hospital

The results stated that most of the body temperatures of neonates in the normal category were 76.7% and 23.3% were hypothermic. Temperature instability in newborns is influenced one of them by the baby's birth weight and gestational age when the baby is born. Newborns undergo biological changes during the first day of birth, but their health depends on the care they receive. The skin of the maternity mother serves as an incubator, because it is warmer than the skin of the nonpartum mother. It can automatically affect the temperature of newborns who are prone to heat loss. This means that early initiation of breastfeeding can reduce the risk of heat loss in newborns that can lead to death [14]. There are several purposes used for body temperature measurement or body temperature observation for postpartum mothers, namely to find out the body temperature of

postpartum mothers, find out abnormalities that occur in postpartum mothers and to find out the development of postpartum mothers while studies in newborns can be done immediately after birth, namely to examine the baby's adjustment from intrauterine to extrauterine life. Furthermore, a complete physical examination is carried out to determine and detect any abnormalities in newborns [15]. Early initiation of breastfeeding should be done directly at birth, without being delayed by weighing or measuring the baby. The baby should also not be cleaned, only dried except for his hands. This process must take place skin to skin between the baby and the mother [5].

Breastfeeding, especially IMD, contributes greatly to reducing AKB. According to Edmond's study, in Ghana of 10,947 infants, 22% of infant deaths within the first month could be prevented by breastfeeding within the first hour of birth. While breastfeeding on the first day of birth can reduce infant mortality by up to 16%. Referring to the study, it is estimated that early breastfeeding initiation programs can save 30,000 babies in Indonesia in the first month of birth.

There are 6 roles of IMD and exclusive breastfeeding in suppressing AKB through increasing the baby's immune system so that babies avoid various infections. In addition to these benefits, IMD can also reduce the incidence of icteric neonatorum physiology [4]. According to the researchers' assumptions, the body temperature of newborns after the initiation of early breastfeeding is in a stable state, mothers appear calmer and happier with the presence of babies in their arms. The chest of the mother who gave birth is able to control the warmth of her chest skin according to the needs of her baby's body, this makes the baby feel calmer and more comfortable, not only provides benefits to prevent hypothermy. The results of this study are in line with research entitled the effect of early breastfeeding initiation on the incidence of hypothermia in newborns which shows that it can be known that the increase in temperature in newborns is caused by early breastfeeding initiation actions [10]. Babies who are less mature and low birth weight babies have a risk of body temperature instability. This is due to a lack of subcutaneous fat, a large surface area to weight ratio, and reduced heat production due to inadequate brown fat and inability to shiver [2]. The main mechanism in newborns to maintain thermoregulation is by means of non-shivering thermoregulation, which is a mechanism influenced by the sympathetic nervous system to stimulate metabolic processes by oxidizing brown fat tissue. Increased metabolism of brown fat tissue will increase heat production from within the body [3].

3. The relationship of early breastfeeding initiation (IMD) to the incidence of hypothermy in neonates at Palang Biru Gombong Hospital

The results stated that most respondents who succeeded in doing IMD had a normal body temperature of 95.8% and neonates who did not succeed in doing IMD of 47.4% had hypothermy. The results of the Chi-Square Test obtained a p-value of $0.001 < 0.05$ so that it can be concluded that H_0 is rejected and H_a is accepted which means that there is a relationship between Early Breastfeeding Initiation (IMD) to the incidence of hypothermy in neonates at Palang Biru Hospital Gombong.

Body temperature is regulated by offsetting heat production against heat loss. When the formation of heat in the body is greater than the loss of heat, then the body temperature will increase. Excessive ambient temperature can also result in an increase in temperature in newborns. Conversely, when heat loss in the body is greater than the rate of heat formation, there will be a decrease in temperature [3]. As in a study conducted by Jia in 2013, newborns born in the delivery room with a room temperature of $25.1 \pm 0.6^\circ\text{C}$ had a lower incidence of hypothermia (temperature below 36.0°C) than newborns born in the delivery room with a room temperature of $22.5 \pm 0.6^\circ\text{C}$ [3]. For this reason, early initiation of breastfeeding is very necessary because it can maintain normal temperature in newborns and prevent hypothermia in newborns.

Babies who initiate early breastfeeding with the mother in the first hour after birth are better at regulating temperature and breathing, so they need less to be treated in the NICU. Early initiation of breastfeeding stimulates specific behaviors that ensure mother and baby get to know each other in the day after birth. Early initiation of breastfeeding is also important in helping transfer mother-to-baby bacteria, which helps the baby's immune system. This is important when a baby is born by cesarean section, as early initiation of breastfeeding and breastfeeding is a great way to help increase exposure to good bacteria. Babies who stay close to the mother's skin feel calm and less at risk of increased stress hormones. Early initiation of breastfeeding also promotes long-term breastfeeding success [13]. Research [15] shows that after IMD is carried out on newborns, there is

a change in body temperature, namely at first the baby's body temperature is almost entirely low body temperature increases by 10-2°C to body temperature in normothermic values. According to research [11] after the study, it was found that the average body temperature of newborns before the implementation of IMD was 36.52°C with the body temperature of newborns after the implementation of IMD of 37.31°C. This shows an increase in temperature of 0.79°C which indicates the influence of IMD on newborn body temperature Based on previous research, researchers assume that newborns have not been able to regulate their body temperature, So it will tend to experience physical stress due to temperature changes outside the uterus. Early Breastfeeding Initiation is the process of nurturing a baby to breastfeed itself after birth. The advantage of early breastfeeding initiation is that it can maintain the baby's body temperature to stay warm and can stimulate uterine contractions thereby reducing the risk after delivery. Research [12] also proves that Early Breastfeeding Initiation (IMD) affects changes in newborn body temperature. As long as the baby crawls to find the breast, starting breastfeeding as soon as possible to warm the baby completely. Because the body temperature of mothers who give birth is hotter than mothers who do not give birth, if the baby is placed on the mother's chest it can warm the baby and prevent the baby from experiencing a decrease in body temperature

4. Conclusion

The characteristics of respondents are mostly female, birth weight 2500-4000 grams, body length ≤50 cm and term gestation. Most IMD processes are successful. Most neonatal body temperatures in the category are not hypothermic. The results of the Chi-Square test obtained a p-value of 0.001<0.05 so that it can be concluded that H₀ is rejected and H_a is accepted

References

1. Adam, A., Bagu, A. A., & Sari, N. P. (2016). *Pemberian Inisiasi Menyusu Dini Pada Bayi Baru Lahir*. Jurnal Kesehatan Manarang, 2(2), 76.
2. Amelia. (2015). *Pengaruh IMD terhadap Suhu Tubuh Bayi Baru Lahir*. Journal Stikesyarsi, 2(1).
3. Diba, Faisal. (2020). *Pelaksanaan Program Inisiasi Menyusu Dini Di Wilayah Kerja Puskesmas Lubuk Buaya Kecamatan Koto Tangah*. Jurnal Kesehatan Andalas, 8(4), 1–9.
4. Dwi, Tinah. (2015). *Inisiasi Menyusui Dini Terhadap Kejadian Hipotermi Pada Bayi Baru Lahir di BPM Mujiyem Boyolali Tahun 2015*, Jurnal. STIKes Estu Boyolali.
5. Ekawati. (2014). *Faktor-faktor yang Berhubungan dengan Perubahan Suhu Pada Bayi Baru Lahir di Klinik Bersalin Mitra Husada Desa Pangean Kecamatan Maduran Kabupaten Lamongan*. Jurnal Kebidanan, 2(2).
6. Fauziah Nasution. (2017). *Inisiasi Menyusu Dini dan Bounding Attachment dalam Peningkatan Kesehatan Secara Fisik dan Psikis*. Jurnal Jumantik, 2, 40–42.
7. Hidayat, A. A. (2015). *Kesehatan Ibu dan Anak*. Jakarta: Heath Book
8. Kristiyanasari, W. (2013). *ASI, Menyusui dan Sadari*. Yogyakarta: Nuha Medika.
9. Lestari, M. (2019). *Faktor Terkait Inisiasi Menyusu Dini pada Ibu Postpartum di Rumah Sakit Umum Daerah Kota Cilegon*. Jurnal Penelitian Dan Pengembangan Pelayanan Kesehatan, 3(1), 17–24.
10. Ningsih, M. (2021). *Keajaiban Inisiasi Menyusu Dini (IMD)*. Jurnal Ilmiah Sangkareang Mataram, 8(1), 1–8.
11. Roesli, Utami. (2012). *Panduan: inisiasi menyusui dini: plus asi eksklusif*. Pustaka Bunda.
12. Siahaan. (2020). *Simulasi Inisiasi Menyusu Dini (IMD) di Wilayah Kerja Puskesmas Bandar Baru Kecamatan Sibolangit tahun 2020*. Jurnal Pengabdian Masyarakat (Kesehatan), 2(1), 12–17
13. Sujiyatini. (2013). *Asuhan Kebidanan Persalinan*. Yogyakarta: Nuha Medika.
14. Yulianti, Yeyeh. (2015). *Keajaiban ASI-Makanan Terbaik untuk Kesehatan, Kecerdasan dan Kelincahan si Kecil*. Yogyakarta: CV. Andi.
15. Yusuf, K. (2019). *Karakteristik dan Tingkat Pengetahuan Ibu Nifas Tentang Inisiasi Menyusu Dini (IMD)*. Ghidza: Jurnal Gizi Dan Kesehatan, 3(1), 33. <https://doi.org/10.22487/j26227622.2019.v3.i1.12118>